<u>AMENDMENTS TO THE CLAIMS</u>

Please amend the claims as set forth below:

1. (Currently amended) A method comprising:

building a linear model of an analog fractional-N phase locked loop unit having a voltage controlled oscillator; and

determining a transfer function of a <u>pre-emphasis</u> filter that is optimized according to predefined optimization criteria<u> to thereby determine the pre-emphasis filter</u>,

wherein said optimization criteria are related to an input to said <u>pre-emphasis</u> filter and are related to an input to said voltage controlled oscillator.

2. (Original) The method of claim 1, further comprising:

including in said model impairments of one or more components of said phase locked loop unit.

3. (Original) The method of claim 1, further comprising:

including phase noise in said model.

4. (Original) The method of claim 1, further comprising:

including in said model variations of parameters of said phrase locked loop unit from nominal values.

5. (Original) The method of claim 1, wherein determining said transfer function includes determining said transfer function to be optimized according to said predefined optimization criteria that includes a mean squared error of an input to said filter and an input to said voltage controlled oscillator.

6. (Original) The method of claim 1, wherein determining said transfer function includes determining said transfer function to be optimized according to said predefined optimization criteria that includes spectral cleanliness of an output of said voltage controlled oscillator.

7. (Original) The method of claim 1, further comprising:

selecting a topology for said transfer function.

8. (Original) The method of claim 1, wherein determining said transfer function includes determining a finite impulse response transfer function.

9. (Original) The method of claim 1, wherein determining said transfer function includes determining an infinite impulse response transfer function.

10. (Currently amended) A method comprising:

adjusting digital values of a <u>pre-emphasis</u> filter to compensate for variations in an analog fractional-N phase locked loop unit**[.]**<u>; and</u>

determining adjusted digital values so that a transfer function of said pre-emphasis filter is optimized according to predefined optimization criteria;

wherein said optimization criteria are related to an input to said pre-emphasis filter and are related to an input to a voltage controlled oscillator of the analog fractional-N phase locked loop unit.

11. (Original) The method of claim 10, wherein adjusting said digital values includes adjusting said digital values to compensate at least for variations in voltage, temperature, aging, or any combination thereof.

12. (Original) The method of claim 10, wherein adjusting said digital values includes adjusting said digital values to compensate at least for variations of parameters of said phase locked loop unit from nominal values.

13. Cancelled

14. (Currently amended) A fractional-N sigma-delta modulator comprising:

a pre-emphasis filter having a finite impulse response transfer function, said pre-emphasis filter coupled to an input of a sigma-delta converter; and

a fractional-N phase locked loop unit coupled to an output of said sigma-delta converter**[.]**;

wherein digital values of said pre-emphasis filter are to be adjusted so that said transfer function is optimized according to predefined optimization criteria; and

wherein said optimization criteria includes a mean squared error of an input to said pre-emphasis filter and an input to a voltage controlled oscillator of said fractional-N phase locked loop unit.

15. (Original) The fractional-N sigma-delta modulator of claim 14, wherein said transfer function is substantially equivalent to a transfer function of a minimum mean squared error equalizer.

16.-17. Cancelled

18. (Currently amended) The fractional-N sigma-delta modulator of claim **[**16**]** 14, wherein said optimization criteria includes spectral cleanliness of an output of a voltage controlled oscillator of said fractional-N phase locked loop unit.

19. (Currently amended) A fractional-N sigma-delta modulator comprising:

a sigma-delta converter;

a fractional-N phase locked loop unit coupled to an output of said sigma-delta converter and including a voltage controlled oscillator; and

a pre-emphasis filter having an infinite impulse response transfer function, said pre-emphasis filter coupled to an input of said sigma-delta converter, wherein said infinite impulse response transfer function is not an inverse of a transfer function from an output of said pre-emphasis filter to an input of said voltage controlled oscillator**[**.**]**;

wherein digital values of said pre-emphasis filter are to be adjusted so that said infinite impulse response transfer function is optimized according to predefined optimization criteria; and

wherein said optimization criteria are related to an input to said pre-emphasis filter and are related to an input to said voltage controlled oscillator.

20.-21. Cancelled

22. (Currently amended) The fractional-N sigma-delta modulator of claim **[**20**]** 19, wherein said optimization criteria includes spectral cleanliness of an output of said voltage controlled oscillator.

23.-25. Cancelled

26. (Currently amended) A communication device comprising:

a dipole antenna;

a power amplifier coupled to said dipole antenna; and

a fractional-N sigma-delta modulator coupled to said power amplifier, said fractional-N sigma-delta modulator including at least:

a pre-emphasis filter coupled to an input of a sigma-delta converter; and

a fractional-N phase locked loop unit coupled to an output of said sigma-delta converter,

wherein a transfer function of said filter is to be optimized according to predefined optimization criteria**[.]**<u>;</u>

<u>wherein said optimization criteria are related to an input to said pre-emphasis filter and are related to an input to a voltage controlled oscillator of the fractional-N phase locked loop unit.</u>

27. (Original) The communication device of claim 26, wherein said transfer function is a finite impulse response.

28. (Original) The communication device of claim 26, wherein said transfer function is an infinite impulse response.

29. (Currently amended) A communication system comprising:

a first communication device; and

a second communication device <u>configured to communicate with the first communication device and</u> including at least:

a fractional-N sigma-delta modulator including at least:

a<u>n adaptive pre-emphasis</u> filter coupled to an input of a sigma-delta converter; and

a fractional-N phase locked loop unit coupled to an output of said sigma-delta converter,

wherein a transfer function of said <u>adaptive pre-emphasis</u> filter is to be optimized according to predefined optimization criteria**[.]**<u>;</u>

wherein said optimization criteria are related to an input to said adaptive pre-emphasis filter and are related to an input to a voltage controlled oscillator of the fractional-N phase locked loop unit.

30. (Original) The communication system of claim 29, wherein said transfer function is a finite impulse response.

31. (Original) The communication system of claim 29, wherein said transfer function is an infinite impulse response.

32. (New) The fractional-N sigma-delta modulator of claim 19, wherein the pre-emphasis filter is an adaptive pre-emphasis filter.